

(No Model.)

W. F. COLLINS.
DYNAMO ELECTRIC MACHINE.

No. 435,015.

Patented Aug. 26, 1890.

Fig. 1.

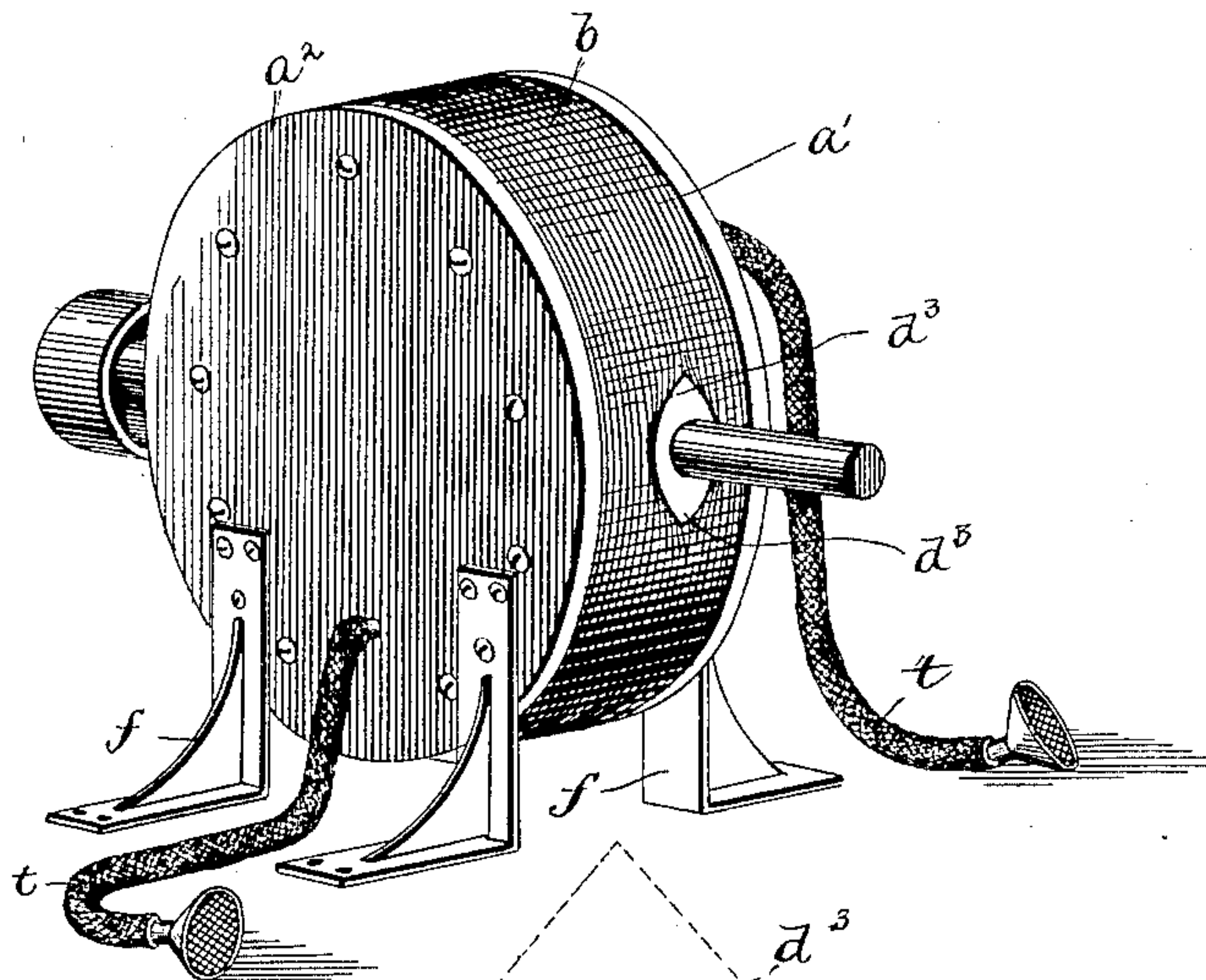


Fig. 2.

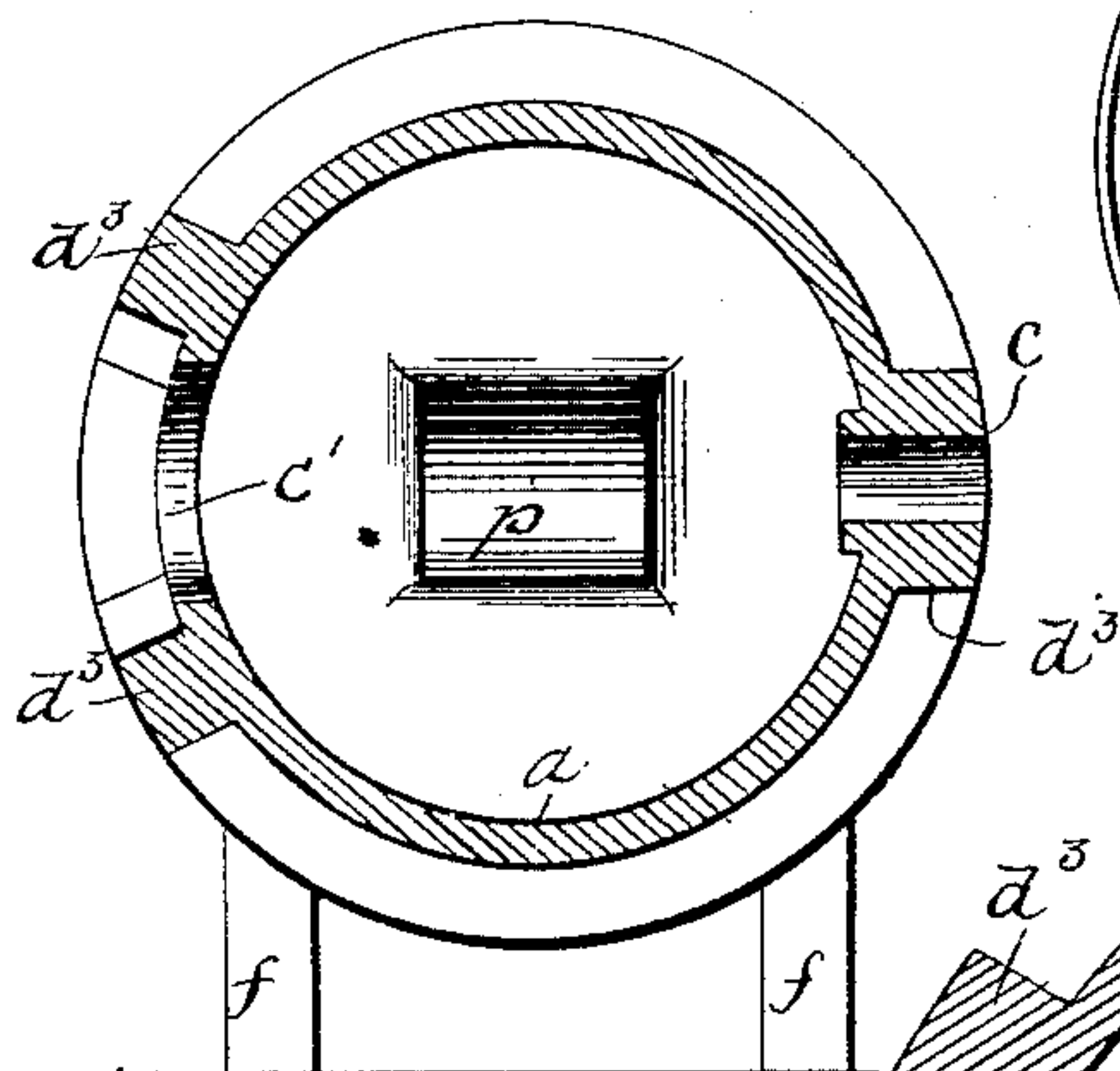


Fig. 5.

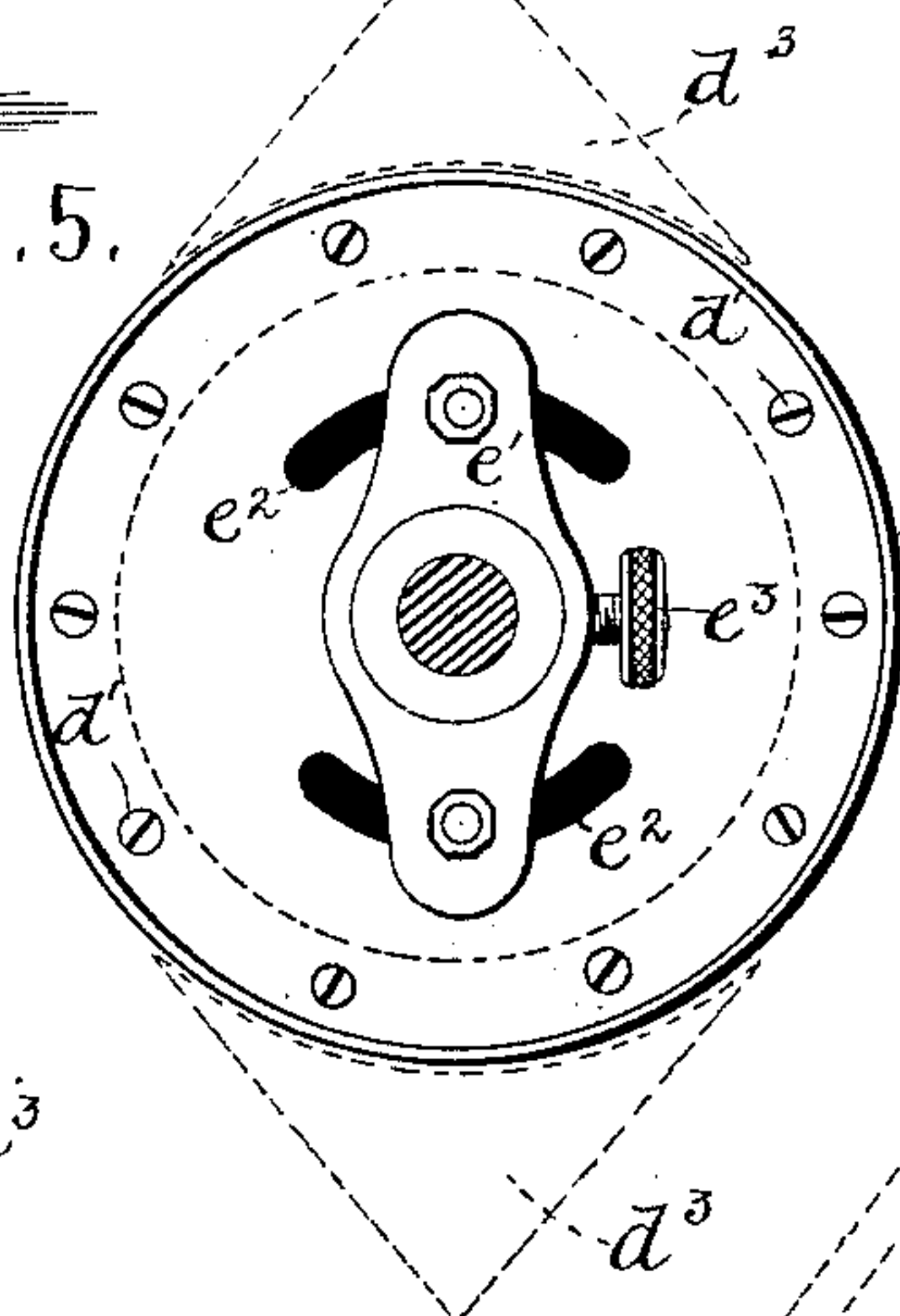


Fig. 3.

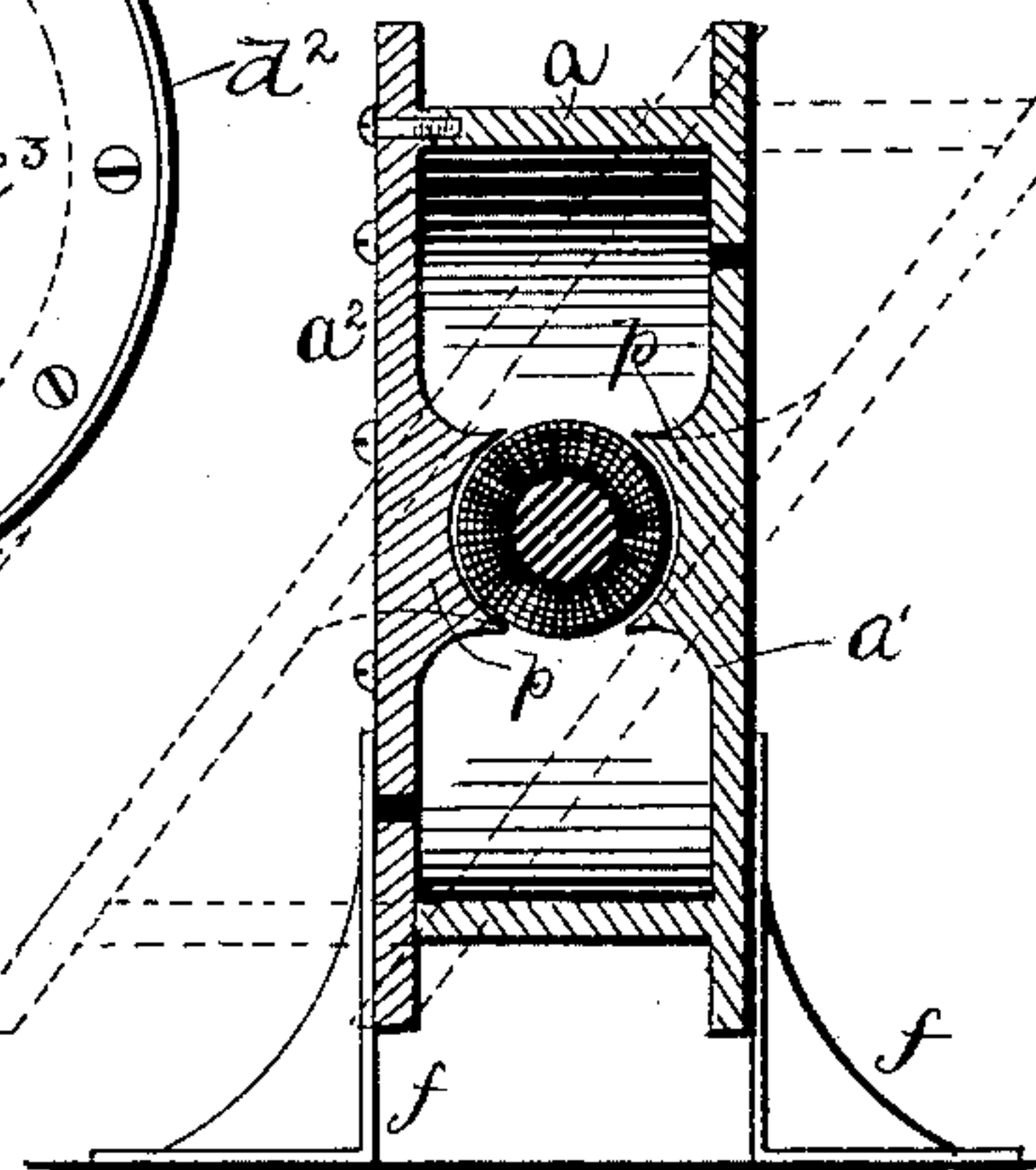


Fig. 6.

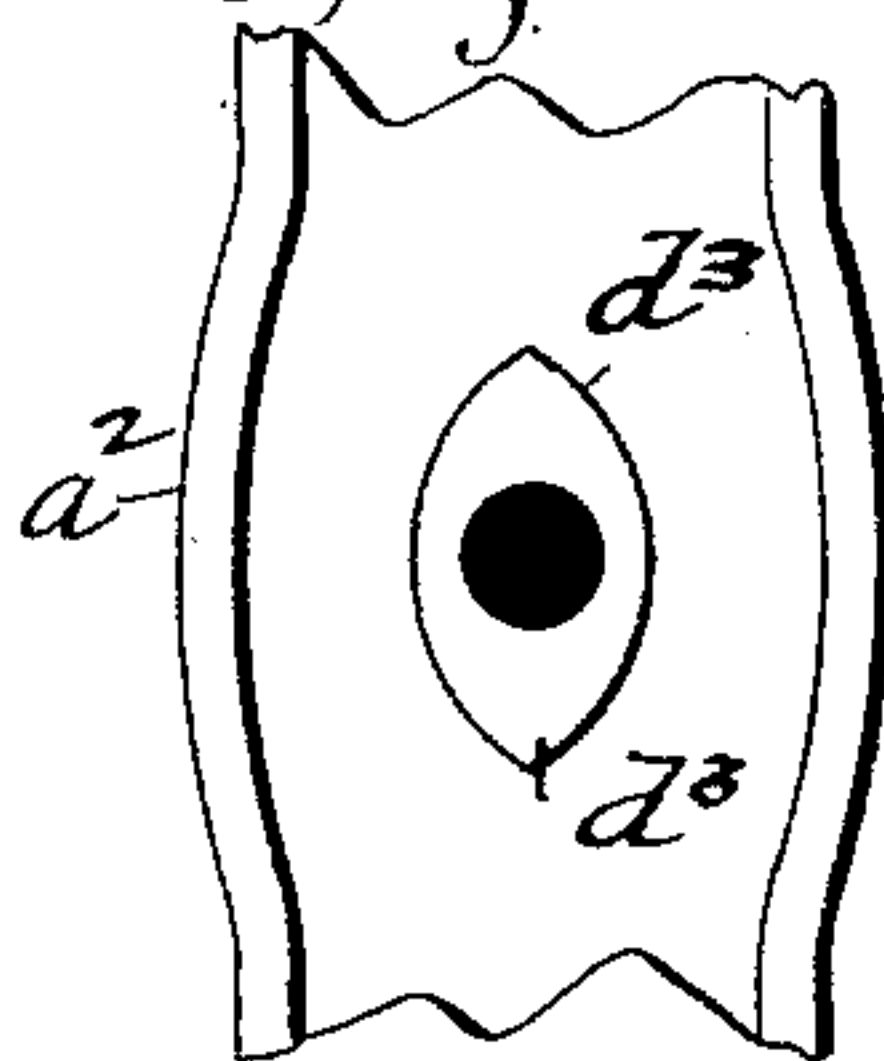
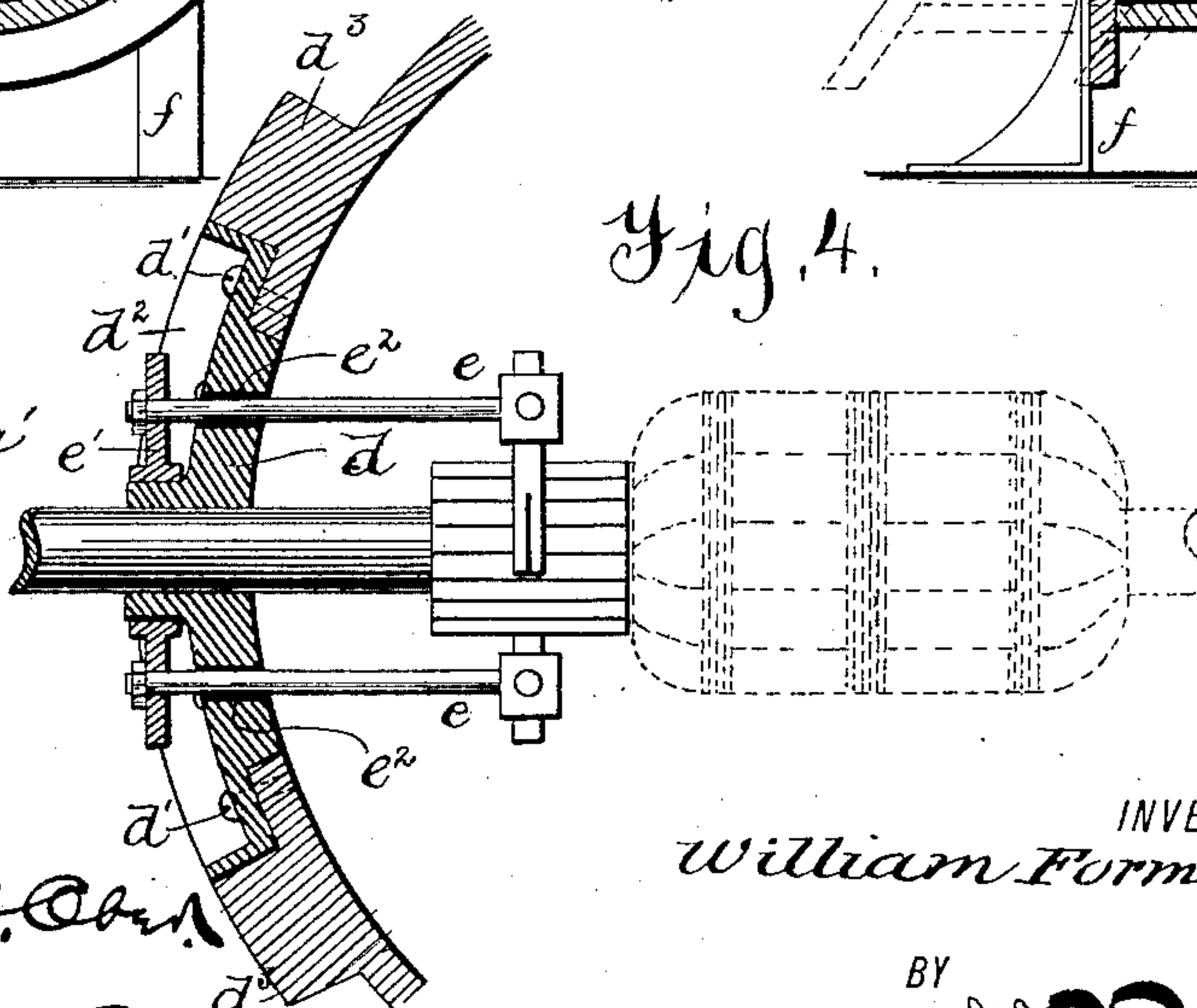


Fig. 4.



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DYNAMO-ELECTRIC MACHINE.

SPECIFICATION forming part of Letters Patent No. 435,015, dated August 26, 1890.

Application filed July 27, 1889. Serial No. 318,825. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM FORMAN COLLINS, a subject of the Queen of Great Britain, and a resident of the city, county, and State of New York, have invented certain new and useful Improvements in Dynamo - Electric Machines, of which the following is a specification.

This invention relates to dynamo-electric machines and motors, the object being to provide a simple construction which shall be efficient in operation.

The machine has but a single field-coil, which is wound upon an iron spool, the heads of which are in the form of disks having pole-pieces projecting inward toward each other from their centers. The spool is made hollow to accommodate the armature, and in some cases the commutator and brushes, which are mounted upon a shaft running at right angles to the axis of the coil.

The invention also embraces other details relating to the manner of supporting the armature-shaft, all of which will be fully set forth in the following description.

Referring to the accompanying drawings, Figure 1 represents a perspective view of the machine. Fig. 2 represents a central section taken at right angles to the axis of the coil. Fig. 3 represents a section taken at right angles of the armature-shaft. Fig. 4 is a detailed view of the bearing for the armature-shaft. Fig. 5 is a face view of the detail, and Fig. 6 is a detail view.

The improvements herein relate only to the construction of the field-magnet, the machine being adapted for any style of armature. I prefer to use the Siemens armature, however, because its shape is better adapted for this machine. The field-magnet is a spool-shaped body consisting of a cylindrical portion *a* and two iron heads or disks *a'* *a''*. The heads extend outward beyond the cylinder to form flanges, between which a coil of wire *b* is located, the cylinder *a* serving as a mechanical core upon which the coil is wound. Upon the inner or adjacent sides of the disks or heads are formed projecting pole-pieces *p*, between which the armature is placed. The general shape of the machine is therefore like an ordinary spool-magnet whose diam-

eter is greater than its length. Now the magnetic circuit of such a structure would be through the iron disks or heads, across the armature-space, and across the air-space on the outside of the coil between the flanges. A part of the magnetic lines, however, might shunt the armature-space by traveling through the cylinder *a*; but this part of the circuit would soon become saturated, and the overflow or major portion of the lines would cross the armature-space. At diametrically-opposite points the cylinder *a* is perforated, as shown in Fig. 2, to accommodate bearings for the armature-shaft. One of these perforations is made large enough to admit the whole armature, and the other is simply large enough to form the bearing of the shaft, a boss *c* being provided for this purpose. Above and below the bearings on each side I have provided the triangular-shaped lugs *d*³. These part the wire and render the windings smooth.

To facilitate the operation of removing the armature from the machine I have provided the plate *d*, which is made to fit the large perforation *c'*. This plate forms one of the bearings for the armature-shaft and also supports two brush-holders *e e*, mounted on a pivoted yoke *e'* and passing through slots *e''* in the plate. By swinging the yoke on its pivot the position of the brushes is changed. Set-screw *e''* secures the yoke. The plate is secured in place by bolts *d'* *d''*, and by removing these bolts the whole plate, together with the armature, commutator - brushes, and shaft may be withdrawn. The edges of the plate may be provided with flanges *d''*, which serve to part the winding and prevent its encroachment upon the plate.

In Fig. 6 I have shown the flanges on the heads of the magnet slightly distorted adjacent to the bearings in order to provide room enough for the wire. It will be observed that the box-like form of the field-magnet will insure protection of the armature.

In order to ventilate the machine without providing a passage for foreign substances, I connect two pieces of tubing *t t*, either flexible or rigid, at opposite points on the structure and provide for their communication with the interior space. The ends of the tubes are bell-shaped and covered with gauze.

The machine may be supported in any suitable manner. I have shown brackets or feet *ff* for this purpose.

5 In Fig. 3 the dotted lines represent a distorted or diagonal arrangement of the coil with respect to the armature and shaft.

Having thus described my invention, I claim--

10 1. In a dynamo-electric machine, a field-magnet having a single coil, the conductors constituting the same being parted or divided at a point sufficiently to permit the armature to be passed through the opening, in combination with the armature located within the
15 coil.

2. A field-magnet consisting of a single spool upon which a single coil is wound, a

chamber being formed inside the spool, and pole-pieces projecting from the heads of the spool into said chamber, in combination with 20 an armature located inside the spool, the shaft of which is at right angles to the axis of the spool, the wire of the coil being parted and the spool perforated to form an opening large enough to allow the armature to pass 25 through it.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

WILLIAM FORMAN COLLINS.

Witnesses:

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